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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/840,051	05/06/2004	Michael Bothe	041165-9060-00	6641
25231 7590 06/10/2009 MARSH, FISCHMANN & BREYFOGLE LLP 8055 East Tufts Avenue Suite 450 Denver, CO 80237				
EXAMINER				
GETACHEW, ABYY				
ART UNIT		PAPER NUMBER		
2841				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/840,051

**Applicant(s)**

BOTHE ET AL.

**Examiner**

ABIY GETACHEW

**Art Unit**

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 16 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5-15, 17 and 19-27 is/are rejected.
- 7) ☒ Claim(s) 2, 4 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claim 1-27 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

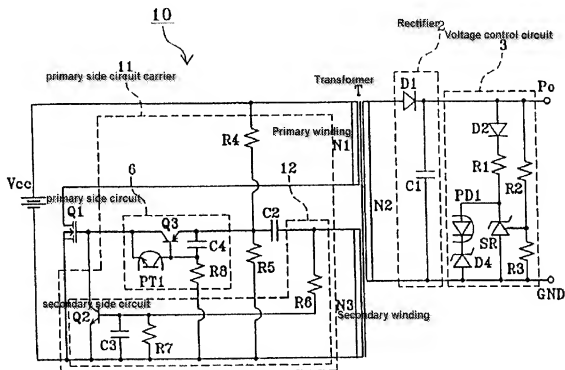
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3, 5-15, 17, 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamaguchi et al. (US 2002/0136031 A1) hereinafter refers as Yamaguchi.

**Regarding claim 1**, Yamaguchi disclose a power supply circuit comprising: at least one transformer (figure 3 element T) that includes a primary winding (figure 3 element N1) and a secondary winding (figure 3 element N2); a primary side circuit (figure 3 element Q1) including a primary side circuit carrier (figure 3 element 11) that includes a plurality of components at least a subset of which are substantially oriented in a first plane (See figure 3), the primary side circuit (figure 3 element Q1) being electrically connected to the primary winding (figure 3 element N1) of the transformer (figure 3 element T); a secondary side circuit (figure 3 element Q2) including a

secondary side circuit carrier (figure 3 element 3) that includes a plurality of components at least a subset (figure 3 element 3) of which are substantially oriented in a second plane substantially perpendicular to the first plane, the secondary side circuit (figure 3 element Q2) being electrically connected to the secondary winding (figure 3 element N2) of the transformer (figure 3 element T).



As depicted in figure above, Yamaguchi teaches that a switching power supply unit includes a transformer having a primary winding, a secondary winding, and a feedback winding, a first switch element connected in series to the primary winding, a control circuit provided between the feedback winding and a control terminal of the first switch element, a rectification circuit connected to the secondary winding, and an output-voltage detecting circuit which detects an output voltage output from the rectification circuit and feeds back the voltage to the control circuit. The control circuit

includes a turn-off circuit for turning off the first switch element when it has been in an ON state, and an off-period control circuit which controls the off-period of the first switch element to be longer as a load is lighter, based on a feedback signal from the output-voltage detecting circuit, by delaying the turning-on of the first switch element.

**Regarding claim 3**, Yamaguchi disclose a power supply circuit comprising at least one transformer (figure 3 element T) that includes a primary winding (figure 3 element N1) connected to a primary side circuit (figure 3 element Q1) and a secondary winding (figure 3 element Q2) connected to a secondary side circuit (figure 3 element Q2), which is wherein components of the primary side circuit (figure 3 element Q1) and components of the secondary side circuit (figure 3 element Q2) are each connected to at least one separate circuit carrier, said circuit carriers being mechanically coupled with one another and wherein at least a subset of the components of the primary side circuit (figure 3 element Q1) and at least a subset of the components (figure 3) of the secondary side circuit (figure 3 element Q2) are arranged in at least two different planes, wherein components of the primary side circuit (figure 3 element Q1) connected to a plurality of primary side circuit carriers (figure 3) .

**Regarding claim 5**, Yamaguchi disclose wherein at least one of the primary side circuit carrier and the secondary side circuit carriers comprises an integrated resistor. (See figure 3)

**Regarding claim 6**, Yamaguchi disclose wherein at least one of the circuit carriers comprises integrated capacitors (path between N3 and PT1) of a medium

dielectric strength.(see figure 3 further more see Column 1 lines 59 and Column 3 line 22)

**Regarding claim 7**, Yamaguchi disclose wherein the integrated capacitors are produced as a monolayer structure. (See figure 3 for is a single, closely packed layer).

**Regarding claim 8**, Yamaguchi disclose, wherein the integrated capacitors are produced as a multilayer structure. (Page 5 sections 0070 - 0073).

**Regarding claim 9**, Yamaguchi disclose wherein the integrated capacitors can be produced by introducing a dielectric precursor into recesses of the circuit carrier.

**Regarding claims 10 -13**, Yamaguchi disclose wherein at least one of the circuit carriers comprises integrated capacitors of a high dielectric strength. (See section 0049, i.e. the voltage at the output terminal Po is the highest at the time a current begins to flow from the secondary winding N2. Furthermore Yamaguchi disclose wherein the integrated capacitors can be are produced as a monolayer structure (See the Abstract; integrated capacitor includes a conductor plane, dielectric surface and a signal transmission layer).

**Regarding claim 14**, Yamaguchi disclose wherein at least one of the circuit carriers comprises discrete active or passive components. (Figure 3, i.e. Yamaguchi teaches that Resistors, capacitors, inductors and diodes are examples of passive components. Integrated circuits contain both active and passive components).

**Regarding claims 15, 17 and 23**, Yamaguchi disclose wherein the transformer is a piezoelectric transformer. (Page 3 section 0048, some materials such as, crystals

and certain ceramics, has the ability to generate an electric potential in response to applied mechanical stress).

4. Claims 25-27 rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al. (4,712,160) hereafter refer as Sato.

**Regarding claim 25**, Sato discloses a method for producing a power supply circuit (See figure 1B) comprising at least one transformer (figure 2 element 3), a primary side circuit (figure 2 element 1) and a secondary side circuit (figures 3A and 3B element 2), said method comprising the following steps: connecting components of the primary side circuit (figures 3A and 3B element 1) on to at least one primary side circuit carrier (figures 3A and 3B element 7), at least a subset of the components of the primary side circuit being substantially oriented in a first plane (figures 3A and 3B); connecting components of the secondary side circuit to at least one separate secondary side circuit carrier (figures 3A and 3B element 7), at least a subset of the components of the secondary side circuit (figures 3A and 3B element 2) being substantially oriented in a second plane (see the abstract).

**Regarding claim 26**, Sato discloses a method for producing a power supply circuit comprising at least one transformer that includes a primary winding and a secondary winding, a primary side circuit and a secondary side circuit (figures 3A and 3B element 2), said method comprising the following steps: connecting components of the primary side circuit (figures 3A and 3B element 1) on to at least one primary side circuit carrier, at least a subset of the components of the primary side circuit (figures 3A and 3B element 1) being substantially oriented in a first plane; connecting components

of the secondary side circuit to at least one separate secondary side circuit carrier (figures 3A and 3B element 2) , at least a subset of the components of the secondary side circuit being substantially oriented in a second plane; connecting components of the secondary side circuit to at least one separate secondary side circuit carrier, at least a subset of the components of the secondary side circuit (figures 3A and 3B element 2) being substantially oriented in a second plane; coupling the primary side circuit with the primary winding of the transformer; and coupling the secondary side circuit with the secondary winding of the transformer; wherein the first plane is substantially perpendicular to the second plane, and wherein components of the primary side circuit are connected to a plurality of primary side circuit carriers (figures 3A and 3B element 4). (Column 3 lines 37-45).

**Regarding claim 27**, Sato discloses wherein the at least one primary side circuit carrier (figures 3A and 3B element 4) is separated from the at least one secondary side circuit carrier (figures 3A and 3B element 2) by an electrically insulating layer. (Column 3 lines 37-45).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of



the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (US 2002/0136031 A1) hereinafter refer as Yamaguchi in view of Machado (6,225,560).

Regarding claim 19, Yamaguchi disclose all claimed limitation except for wherein the individual circuit carriers are mechanically connectable to one another by means of joint sintering, adhesive bonding or soldering.

Machado disclose wherein the individual circuit carriers are mechanically connectable to one another by means of joint sintering, adhesive bonding or soldering. [Column 6 lines 36-54, i.e. Figure 6 show connections through via soldering or other bonding process]

Yamaguchi and Machado are analogous art because they are from the same field of endeavor which is power supply unit.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply bonding process as taught by Machado on the individual circuit carriers of Yamaguchi in order to facilitate or allow wetting of the surface by the adhesive.

**Regarding claim 20**, Yamaguchi discloses all the claimed limitations except for wherein the individual circuit carriers are electrically connectable to one another through vias in at least one insulation layer.

Machado disclose wherein the individual circuit carriers are electrically connectable to one another through vias in at least one insulation layer. [Column 6 lines 36-54, i.e. Figure 6 show connections through via soldering or other bonding process of Machado].

Yamaguchi and Machado are analogous art because they are from the same field of endeavor which is a power supply unit.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply connections through via soldering as taught by Machado on the individual circuit carriers of Yamaguchi in order to circuit carriers are electrically connectable to one another.

**Regarding claim 21**, Yamaguchi discloses all the claimed limitations except for wherein the power supply circuit is surrounded at least in part by an electrically insulating coating.

Machado discloses the Transformer 104 fabricated in the first process step 502 is disposed within the recesses 112 the base element 102 using mechanical or manual means. As depicted in figure 6, a small bead of silicone is placed in the bottom of each recess 112 or surrounding the component 104 to temporarily affix the respective component 106 to the base 102).

Yamaguchi and Machado are analogous art because they are from the same field of endeavor power supply unit.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply electrically insulating coating as taught by Machado on the individual circuit carriers of Yamaguchi in order to improve the electroconductivity on the circuit carriers.

Regarding claims 22, Yamaguchi as modified by Machado discloses wherein the electrically insulating coating is formed by a casting material. (Column 1 lines 19-24 of Machado).

***Allowable Subject Matter***

8. Claims 2, 4 and 18 are rejected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The applied reference fails to disclose and/or suggest the limitations as set forth in claim 2, "Wherein the plane defined by the components of the secondary side circuit carrier extends in a direction substantially transverse to the plane defined by the components of the primary side circuit carrier", the applied reference fails to disclose and/or suggest the limitations as set forth in claim 4 "wherein the plurality of primary side circuit carriers are separated by an electrically insulating layer from the secondary side circuit carrier", and the applied reference fails to disclose and/or suggest the limitations as set forth in claim 18 "wherein at least one of the circuit carriers is designed such that it discharges dissipated heat produced during operation to the outside."

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **ABIY GETACHEW** whose telephone number is (571)272-6932. The examiner can normally be reached on Monday to Friday 8Am to 4:30Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **DEAN REICHARD** can be reached on (571)272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dean A. Reichard/  
Supervisory Patent Examiner, Art Unit 2841

Abiy Getachew  
Examiner  
Art Unit 2841

A.G.  
May 26, 2009